Flight Operations Summary

- Staffing
  - New Console Analyst starting April 5
    - Randall Wiley: 20+ years experience at NTTF
    - Mr. Wiley will be Mike Wilson's teammate
  - Hiring of 9th Console Analyst being discussed
  - In lieu of a formal budget - 'bottom up' budget being maintained to track TRMM FOT spending week-to-week
- IMOC
  - IMOC Ops Concept under development
  - TRMM in baseline mission set - rehosting to SCS-21 still being discussed
- Risk Assessment
  - Current effort is focused on establishing baseline process maps
  - ATSC Risk*control* tool being used as part of effort
- Overall Support in March
  - Supported 503 SN events -- including 3 'generic' late acquisitions
  - All available science and housekeeping data was recovered

Training

- The goal is:
  - To have all team members certified as CC
  - To keep team members abreast with changes
- New hire training:
  - Update real-time test questions
  - Engineer training session schedule being finalized
- Contingency Checklist:

  - Solar Array malfunction identification Checklist has been developed

    >>Quick and reliable way of confirming Solar Array drive failure
- Advanced Training:

  - Development of Phase 1 of the Advanced Training program completed

  - Phase 1: The identification and compilation of a library of anomalies and rare events on tape for simulator use

    >> 2 month trial period using experienced Console Analyst as feedback

    >>Final implementation of Phase 1 begins this summer

  - Phase 2 is the interactive contingency simulations

Thermal Subsystem

- Thermal subsystem performed nominally
- High thermal conditions experienced on solar array drive remains a serious concern
- No open Anomaly or Event reports
- Attached is the plot of the Beta angles for the month of March

Electrical Subsystem

- Electrical subsystem performed nominally
- CERES power cycling has not had noticeable impact/effect on subsystem - monitoring will continue
- No open Anomaly or Event reports

ACS Subsystem

- Open Issues
  - STTF has fixed software error which affected ephems
    - New FDC value of 16 minutes for ESA blockage has been uplinked (Table #53) . FDCs 81-84 will be re-enabled this week.
  - The most current pointing accuracy numbers are being generated by FDF for ACS and NASDA TIL request
    - New Yaw Update calibrations will probably need to be performed
    - Gyro bias calibrations should not need to be performed
  - Trending reveals that early indications of ESA fogging may be developing (see attached plot)
    - ACS looking into preliminary options such as adjusting ESA biases

ACS Subsystem

- Open Issues (Continued)
  - AR #60 - TDRS EPVs still sometimes fail in position and velocity following TDRS mnvrs
    - New table 85 with updated position & velocity numbers being generated and tested at the STTF
  - Contingency Tables (54 & 66) to relieve torque imbalances due to failed array have been tested &generated
  - Contingency plan to fire one-shot thruster pulses if array fails and momentum builds being developed
  - Failed array checklist will be complete this week

RCS Subsystem

- RCS has performed nominally through Delta-V maneuvers #82 - #89.
- All RCS operating temperatures remain nominal
- All heater operations remain nominal
- No Open RCS Anomaly or Event Reports
- Schatten Predix shows 2000 as peak of 11 year cycle, decreasing starting in 2001
  - +2 Sig index value peaks at 214 (June - Oct ‘00)
- Fuel usage calculations predict mission duration of 6.6 years from launch, based on 99 Schatten predictions with 50kg reserve
- Calculations are being recomputed based on actual 98 Schatten Index values, which were lower than the predictions

RCS Subsystem

- Open Issues:
  - Maneuvers will no longer be conducted every 4 days
    - FDF feels risk is too high to manually change target altitude
    - Old method will be used again starting mid-April, with daily planning updates and maneuver time locked in 48 hrs prior to the burn
  - Review of pre-launch analysis for re-entry survival and controlled re-entry fuel level is still required (50 kg currently)
  - Calculations for thrust and ISP cannot be back-calculated on-orbit
    - Thrust and ISP curves based on vendor measurements made during thruster acceptance testing and are the best numbers available
    - Thruster performance will be verifiable once pressurant is gone and blowdown mode achieved
    - Updated predictions for when blowdown mode will begin are being calculated

Deployables Subsystem

- -Y solar array reached max of 36° C but beta angle did not reach an angle of 48° for the month of March
- Parking -Y solar array at 30° before it fails still being considered
  - ACS and Power concerns will determine implementation of plan
  - Array parking scenario through GSACE control (Disable -Y Sequence)
    - Must modify S/C RTS # 5 called by Sun Acq TSM to Enable Sequence to allow array to index
    - No changes required for Safehold transition
  - Atomic oxygen and thermal effects on back of array no longer concern based on NASA Thermal Engineer analysis
- Finalizing contingency plans for array if it fails tomorrow

FDS Subsystem

- Q-starts, MS ‘Not Present’, Flywheel, and Invalid Stream (VIRS) still occurring
- EEPROM Writes
    - If CERES changes are implemented; RTS 14, 15, and 34

C&DH Subsystem

- EDAC mutli-bit errors still occurring (1/2 days)
- No clock or FS adjustments needed since 99-067

RF Subsystem

- Undetermined MI required blind acq. for data recovery (ER#95)
- Three Late Acqs in last month (majority seem to be on TDW/171 side)

Power Subsystem

- Since 98-172, 1.03 C/D not achieved on all orbits at Low Beta angles (-20° < Beta < 20°)
- During the March CERES tests and Delta-V maneuvers, the C/D has been below 1.03 on many orbits
- SOC counters have recovered from 99-076 through 99-091 activities (Delta V maneuvers, CERES test)
  - Voltages, C/D are currently nominal
  - Code 563 notified of status

Power Subsystem

- Open issues:
  - Solar Array data for Code 563 (36 more days sent)
  - Change charge settings for future solar array scenario
  - Update C/D trending to include SA data
- Open Anomalies
  - #55 Battery 2 Cell 1 Hitting YH and RH limits

LIS Instrument

- Temperatures, voltages and currents within limits
- Performed Instrument Watchdog reset on 99-089 per request
- MSFC Ground System Status (taken from MSFC report)
  - Y2K testing
  - Ingested 5,868.5 Mb and archived 3,209.1 Mb of raw data (Feb 99)

CERES Instrument

- Limited testing with the INDOEX ground tests: March 17 - March 26
- Limited testing with ScaRaB instrument: March 30 - April 1
  - DAA Voltage converter below 20 V saturation during test
- +15 V DAA Anomaly
  - No significant degradation
- Power-On procedure improved
- Open Issues:
  - Awaiting approval of the proposed Load-Shed scenario
  - Next ScaRaB test scheduled for week of April 19
- Open Anomaly #69 CERES DAA High Voltage on +15V converter

VIRS Instrument

- Voltages and temperatures are nominal
- Anomaly Report #56 (VIRS Reset) is still open

TMI Instrument

- All temperatures, currents, and voltages are within limits
- Open issues
  - Interference issue
    - Was any correlation found from the last Deep Space Calibration between the interference and PR?
  - Does the need for a Deep Space Calibration for TMI outweigh any other risks to TRMM?
    - FOT feels potential harm to VIRS outweigh the need for calibration for TMI unless specifically requested

PR Instrument

- All temperatures, currents, and voltages are within limits
- Continue to perform Internal Calibrations over Australia (as of 99-007)
  - ~10 a week
- Open issues
  - Provided times to Power engineer when Survival heaters came on during last anomaly to aid in analysis of parking the -Y solar array
  - TIL-1205J: Still waiting for updated pointing accuracy values from FDF
  - No other open TILs remain

Ground System

- 5 Ground Related Event Reports written
  - #94: Incorrect AOS - RCCA being written
  - #96: NCC Scheduling Problem
  - #97: ΔV Load Overwritten - RCCAbeing written
  - #98: WSC Forward Failover
  - #99: LAN Outage

Y2K

- String 2 returned to operations as real-time hot backup and prime mission planning
- GTAS returned to operations
  - Still waiting for two 9 GB drives for more data archival space
- String 3 implementation completed
  - Testing continues
    - DOY 99 successful (no crash)
  - Will return string to operations and use string 2 for WSC test in May